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WHAT IS CLAIMED:

1. A method of manufacturing a device, comprising the steps of:

forming a soluble thin film;

5 a dissolving liquid on a film formed on a semiconductor substrate;

forming a mask layer on the film;

forming a resist pattern on the mask layer;

etching the mask layer using

10 a mask to form a mask pattern;

etching the soluble thin film processed using the mask pattern of a mask; and

dissolving the etched soluble

15 dissolving liquid, thereby lifting from the film to be processed.

5 a dissolving liquid on a film to be processed which is
formed on a semiconductor substrate:

forming a mask layer on the soluble thin film;

forming a resist pattern on the mask layer;

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10      a mask to form a mask pattern;
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etching the soluble thin film and the film to be processed using the mask pattern as at least a portion of a mask; and

15 dissolving liquid, thereby lifting off the mask pattern
 from the film to be processed.

20 aluminum oxide, titanium oxide, and titanium nitride.

3. A method according to claim 1, wherein the dissolving liquid is either water or alkaline solution.

25 be processed comprises forming a contact hole in the
film to be processed.

5. A method according to claim 1, wherein the

step of forming the resist pattern comprises forming a resist film with a thickness of 0.3 μm or more on the mask layer and patterning the resist film by photolithography technique to form the resist pattern.

5 6. A method of manufacturing a semiconductor device, comprising the steps of:

forming a soluble thin film which is soluble in a dissolving liquid on a film to be processed which is formed on a semiconductor substrate;

10 forming a first mask pattern on the soluble thin film;

forming a mask layer on the first mask pattern such that an exposed portion of the soluble thin film is covered with the mask layer;

15 etching back the mask layer such that an upper face of the first mask pattern is exposed and the portion of the mask layer covering the exposed portion of the soluble thin film remains to form a second mask pattern;

20 removing the first mask pattern;

etching the soluble thin film and the film to be processed using the second mask pattern as a mask; and

25 dissolving the etched soluble thin film in the dissolving liquid, thereby lifting off the second mask pattern from the film to be processed.

7. A method according to claim 6, wherein the soluble thin film contains at least one compound

8. A method according to claim 6, wherein the dissolving liquid is either water or alkaline solution.

forming a first mask layer;

10 patterning the resist film by using photo-
lithography technique to form a resist pattern; and

15 10. A method according to claim 7, wherein the
step of etching the soluble thin film and the film to
be processed comprises forming a contact hole in the
film to be processed.

forming a soluble thin film which is soluble in a dissolving liquid on a first insulating film which is formed on a semiconductor substrate;

pattern as a mask to form a wiring groove;

removing the resist pattern after the step of

forming the wiring groove;

forming a wire in the wiring groove in an
embedding manner;

5 forming a second insulating film on the wiring and
the soluble thin film;

forming a window portion in the second insulating
film such that the soluble thin film is exposed at
a bottom of the window portion; and

10 dissolving the soluble thin film in the dissolving
liquid to remove the soluble thin film.

12. A method according to claim 11, wherein the
soluble thin film contains at least one compound
selected from the group consisting of tungsten oxide,
aluminum oxide, titanium oxide, and titanium nitride.

15 13. A method according to claim 11, wherein the
dissolving liquid is either water or alkaline solution.

20 14. A method according to claim 11, wherein the
step of removing the soluble thin film comprises
causing the dissolving liquid to contact with the
soluble thin film through the window portion.

15. A method according to claim 11, further
comprising the step of forming a lower wiring in the
first insulating film in an embedding manner prior to
the step of forming the soluble thin film.

25 16. A method according to claim 15, further
comprising the step of forming a via hole reaching the
lower wiring in a bottom of the wiring groove between

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the step of forming the wiring groove and the step of forming the wire in the embedding manner, wherein the step of forming the wire in the embedding manner comprises forming a plug electrode in the via hole.

5 17. A method of manufacturing a semiconductor device, comprising the steps of:

forming an organosilicon compound film on a semiconductor substrate;

10 forming a silicon oxide film on the organosilicon compound film;

forming a resist pattern on the silicon oxide film;

15 etching the organosilicon compound film and the silicon oxide film using the resist pattern as a mask; and

dissolving the etched silicon oxide film in the dissolving liquid, thereby lifting off the resist pattern from the organosilicon compound film.

20 18. A method according to claim 17, wherein the silicon oxide film is formed by supplying gas containing activated oxygen on a surface of the organosilicon compound film.

19. A method according to claim 17, wherein the dissolving liquid is diluted hydrofluoric acid.

25 20. A method according to claim 17, wherein the organosilicon compound film is a SOG film.

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